

Listing of Claims

Claim 1 (Currently Amended): A method of accessing data contained in a first file, wherein said first file is comprised in a plurality of files stored on a secondary storage, said secondary storage comprising a plurality of clusters, a file allocation table (FAT) indicating a corresponding set of clusters allocated to each of said plurality of files, said method comprising:

determining a set of identifiers by examining said FAT, wherein each of said set of identifiers identifies a corresponding one of said set of clusters allocated to said first file; and
storing said set of identifiers in a random access memory (RAM); and
retrieving at least a portion of said first file from said secondary storage based on said set of identifiers stored in said RAM,

wherein said determining and said storing are performed when the content of said first file is to be retrieved from said secondary storage for processing said set of identifiers in said RAM enables faster access to data related to said first file, and not having to store said entire FAT in said RAM minimizes memory space requirements in said RAM.

Claim 2 (Currently Amended): The method of claim 1, wherein each of said plurality of clusters is identified by a corresponding one of a plurality of identifiers, said FAT storing each of said sets set of identifiers in the form of a linked list, wherein an order specified by said linked list indicates the sequence in which said set of clusters are used to store data contained in said first file, said method comprising:

traversing said linked list to retrieve said set of identifiers in said order, wherein said storing stores said set of identifiers in said RAM.

Claim 3 (Currently Amended): The method of claim 2, wherein said set of identifiers are stored according to a technique by which permits each of said set of identifiers can to be retrieved with fewer instructions than the number of instructions required to access the same identifier from said FAT in said secondary storage.

Claim 4 (Original): The method of claim 2, wherein said set of identifiers are stored in the form of an array ~~from~~ in which ~~permits~~ each identifier ~~can~~ to be retrieved by a single access.

Claim 5 (Original): The method of claim 4, further comprising:
receiving a start offset of data to be accessed;
computing a cluster index by dividing said start offset by a number of bytes in each of said plurality of clusters; and
accessing said array using said cluster index to determine a specific one of said set of identifiers, wherein said data to be accessed is present in a cluster identified by said specific one of said set of identifiers.

Claim 6 (Currently Amended): The method of claim 5, wherein data stored in said first file represents a song.

Claim 7 (Currently Amended): A method of implementing an application in a system containing a small memory, wherein said system supports a file system on a secondary storage, wherein said secondary storage comprises a plurality of clusters, wherein said file system comprises a plurality of files and each of said plurality of files is stored in a corresponding one of a plurality of sets of clusters, a file allocation table (FAT) indicating a corresponding set of clusters allocated to each of said plurality of files, said plurality of sets of clusters being contained in said plurality of clusters, said method comprising:

providing a first module which is designed to determine a plurality of identifiers corresponding to a specified file by examining said FAT and store said plurality of identifiers in a random access memory (RAM) according to a convention, wherein said plurality of identifiers specify a set of clusters corresponding to said specified file, said set of clusters being contained in said plurality of sets of clusters;

providing a second module which is to perform an operation on a file of interest, wherein said second module is designed to determine a desired cluster by using said plurality of identifiers stored in said RAM according to said convention;

executing said first module when the content of said specified file is to be retrieved from said secondary storage for processing, wherein said first module is executed while specifying said file of interest as said specified file such that a said plurality of identifiers corresponding to said file of interest are stored in said RAM according to said convention; and

executing said second module after executing said first module,

wherein both of said first module and said second module are executed using at least some of the same locations of said small memory.

Claim 8 (Original): The method of claim 7, wherein said second module is overlaid on the same memory space on which said first module is loaded during execution.

Claim 9 (Currently Amended): The method of claim 8, wherein said convention comprises storing said plurality of identifiers at a pre-specified portion of said RAM.

Claim 10 (Original): The method of claim 9, wherein each of said plurality of files stores data representing a corresponding song.

Claim 11 (Currently Amended): A machine readable medium carrying one or more sequences of instructions for causing a digital processing system to access data contained in a first file, wherein said first file is comprised in a plurality of files stored on a secondary storage, said secondary storage comprising a plurality of clusters, a file allocation table (FAT) indicating a corresponding set of clusters allocated to each of said plurality of files, wherein execution of said one or more sequences of instructions by one or more processors contained in said digital processing system causes said one or more processors to perform the actions of:

determining a set of identifiers by examining said FAT, wherein each of said set of identifiers identifies a corresponding one of said set of clusters allocated to said first file; and storing said set of identifiers in a random access memory (RAM), (RAM); and retrieving at least a portion of said first file from said secondary storage based on said set of identifiers stored in said RAM,

wherein said determining and said storing are performed when the content of said first file is to be retrieved from said secondary storage for processing said set of identifiers in said RAM enables faster access to data related to said first file, and not having to store said entire FAT in said RAM minimizes memory space requirements in said RAM.

Claim 12 (Currently Amended): The machine readable medium of claim 11, wherein each of said plurality of clusters is identified by a corresponding one of a plurality of identifiers, said FAT storing each of said sets set of identifiers in the form of a linked list, wherein an order specified by said linked list indicates the sequence in which said set of clusters are used to store data contained in said first file, further comprising:

traversing said linked list to retrieve said set of identifiers in said order, wherein said storing stores said set of identifiers in said RAM.

Claim 13 (Currently Amended):The machine readable medium of claim 12, wherein said set of identifiers are stored according to a technique by which permits each of said set of identifiers can to be retrieved with fewer instructions than the number of instructions required to access the same identifier from said FAT in said secondary storage.

Claim 14 (Currently Amended):The machine readable medium of claim 12, wherein said set of identifiers are stored in the form of an array from which permits each identifier can to be retrieved by a single access

Claim 15 (Original):The machine readable medium of claim 14, wherein said array comprises an associative array.

Claim 16 (Original): The machine readable medium of claim 14, further comprising:
receiving a start offset of data to be accessed;
computing a cluster index by dividing said start offset by a number of bytes in each of said plurality of clusters; and

accessing said array using said cluster index to determine a specific one of said set of identifiers, wherein said data to be accessed is present in a cluster identified by said specific one of said set of identifiers.

Claim 17 (Currently Amended): A machine readable medium carrying one or more sequences of instructions for causing a digital processing system to implement an application using a small memory space, wherein said digital processing system supports a file system on a secondary storage, wherein said secondary storage comprises a plurality of clusters, wherein said file system comprises a plurality of files and each of said plurality of files is stored in a corresponding one of a plurality of sets of clusters, said plurality of sets of clusters being contained in said plurality of clusters, a file allocation table (FAT) indicating a corresponding set of clusters allocated to each of said plurality of files, wherein execution of said one or more sequences of instructions by one or more processors contained in said digital processing system causes said one or more processors to perform the actions of:

providing a first module which is designed to determine a plurality of identifiers corresponding to a specified file by examining said FAT and store said plurality of identifiers in a random access memory (RAM) according to a convention, wherein said plurality of identifiers specify a set of clusters corresponding to said specified file, said set of clusters being contained in said plurality of sets of clusters;

providing a second module which is to perform an operation on a file of interest, wherein said second module is designed to determine a desired cluster by using said plurality of identifiers stored in said RAM according to said convention;

executing said first module when the content of said specified file is to be retrieved from said secondary storage for processing, wherein said first module is executed while specifying said file of interest as said specified file such that a plurality of identifiers corresponding to said file of interest are stored in said RAM according to said convention; and

executing said second module after executing said first module,

wherein both of said first module and said second module are executed using at least some of the same locations of said small memory.

Claim 18 (Original): The machine readable medium of claim 17, wherein said second module is overlaid on the same memory space on which said first module is loaded during execution.

Claim 19 (Currently Amended): The machine readable medium of claim 18, wherein said convention comprises storing said plurality of identifiers at a pre-specified portion of ~~a~~ said RAM.

Claim 20 (Currently Amended): An apparatus accessing data contained in a first file, wherein said first file is comprised in a plurality of files stored on a secondary storage, said secondary storage comprising a plurality of clusters, a file allocation table (FAT) indicating a corresponding set of clusters allocated to each of said plurality of files, said apparatus comprising:

means for determining a set of identifiers by examining said FAT, wherein each of said set of identifiers identifies a corresponding one of said set of clusters allocated to said first file; and

means for storing said set of identifiers in a random access memory (~~RAM~~), (RAM); and

means for retrieving at least a portion of said first file from said secondary storage based on said set of identifiers stored in said RAM,

wherein said determining and said storing are performed when the content of said first file is to be retrieved from said secondary storage for processing said set of identifiers in said RAM enables faster access to data related to said first file, and not having to store said entire FAT in said RAM minimizes memory space requirements in said RAM.

Claim 21 (Currently Amended): The apparatus of claim 20, wherein each of said plurality of clusters is identified by a corresponding one of a plurality of identifiers, said FAT storing ~~each of said sets~~ set of identifiers in the form of a linked list, wherein an order specified by said linked list indicates the sequence in which said set of clusters are used to store data contained in said first file, said apparatus further comprising:

means for traversing said linked list to retrieve said set of identifiers in said order, wherein said storing stores said set of identifiers in said RAM..

Claim 22 (Currently Amended): The apparatus of claim 21, wherein said set of identifiers are stored according to a technique ~~by which~~ permits each of said set of identifiers ~~can to~~ be retrieved with fewer instructions than the number of instructions required to access the same identifier from said FAT in said secondary storage.

Claim 23 (Currently Amended): The apparatus of claim 21, wherein said set of identifiers are stored in the form of an array ~~from which~~ permits each identifier ~~can to~~ be retrieved by a single access.

Claim 24 (Original): The apparatus of claim 23, wherein said array comprises an associative array.

Claim 25 (Original): The apparatus of claim 24, further comprising:
means for receiving a start offset of data to be accessed;
means for computing a cluster index by dividing said start offset by a number of bytes in each of said plurality of clusters; and
means for accessing said array using said cluster index to determine a specific one of said set of identifiers, wherein said data to be accessed is present in a cluster identified by said specific one of said set of identifiers.

Claims 26 - 28 (Canceled)